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A COST BENEFIT ANALYSIS OF PRIVATE AND PUBLIC SCHOOLS IN DISTRICT MALAKAND OF NORTH WEST FRONTIER PROVINCE

AMIR ZAMAN*, R. A. FAROOQ, MUNIR KAYANI
Department of Education, Abdul Wali Khan University Mardan, Pakistan
*dr.amirzaman@awkum.edu.pk

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ABSTRACT. *The objective of this paper is to compare the relative efficiency of private and public schools in term of cost and benefit per student, achievement and their comparison of high schools of public and private sector in District Malakand. 11 private and 11 public schools were randomly selected for analysis from district Malakand to compare their cost effectiveness. Chi square analysis was made to compare the output of public and private schools. The result shows that private schools are better in student's achievement and in terms of cost per students. Recommendation was made to introduce voucher system in public schools and greater authority be given to school level management.*

Key words: private and public schools, cost benefit analysis, comparing achievement

1. **Introduction.** Broadly speaking education system in Pakistan in general and schools system in particular is characterised by two main sectors, private and public sector. These two sectors are similar structures but different in finance. Schools in public sector are owned, financed and run by government. No tuition fee is charged from parents of students enrolled in these schools. On contrast the private schools are run, owned by persons or organisation and tuition fee is charged from students to support the schools financially. There has been considerable growth of private schools in Pakistan over time.

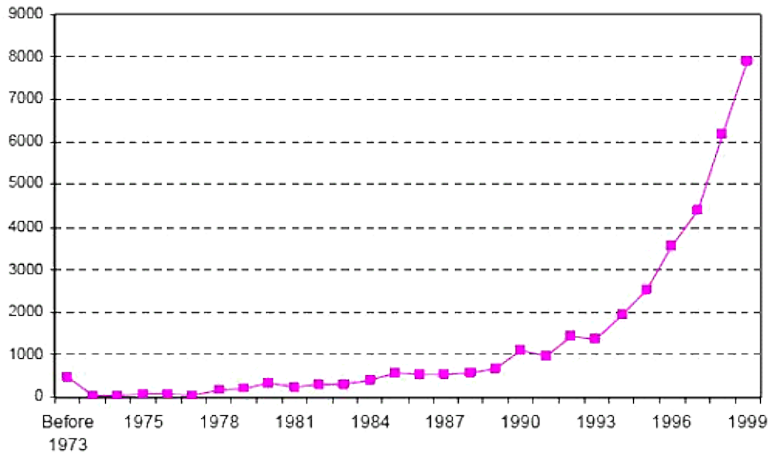

Figure 1: Number of schools in 2000 by year of formation

This growth had a setback in 1973 after the nationalisation policy of Zulifqar Ali Bhutto, the then prime minister, in which all private schools were nationalised. This policy was reversed by the Zia government in 1979 and since then private schools have increased in number each year. The following figure gives a picture of this trend. The increase in private schools is associated with the increase in the children enrolled. In spite of the boost in private schools, educational institutions did, still, not service large proportions of the country's population. Jimenez and Tan (1987)[5] consider that private schools seemed to be catering only for the rich. In contrast, Alderman et al. (2001)[2] show that private schooling is used extensively both by the rich and the poor. Even among the lowest quintile, more children are sent to private than public schools in two important cities, of Pakistan, Lahore and Quetta. The change of patterns in the role of private schools from Jimenez and Tan (1985) to Alderman et al's (2001) [1][2][4][5][7] work, points to the need for a nationwide cost and benefit analysis of public and private schooling and their role in provision of education, especially for the purpose of defining policy implications in this sector. A nationwide analysis would be a big project and unattainable for an individual researcher. Therefore, this study is limited to the district of Malakand in the North Western Frontier Province (NWFP) of Pakistan.

In 1983, there were 3,300 private schools in the four provinces while the number in NWFP, where 4,884 in 2006, this study was undertaken by Andrabi et. al., [6]. The population of NWFP is 19% of the whole country. Most of the private schools are coeducational. Table 1 indicates numbers in each category.

Table 1: Number of schools in NWFP, 2006

School type	Male	Female	Coeducational	Total
Government	17,334	8,882	0	26,216
Private	588	272	4,024	4,884
Total	17,922	9,154	4,024	31,100
Source: Educational census 2006, Bureau of Statistics				

2. **Studies about private and public schools comparison.** Habib et al. (2004) [3] conducted a study into school performance to understand which schools were doing better, by assessing and comparing quality of education. He concluded that students in private schools were performing better than students in public public schools, in all subjects, including mathematics. In private schools, 82% of students scored A1, A and B grades, whereas only 58% students of the public schools scored the same grades, indicating an outstanding performance by private schools students. In another study in primary schools, Shami et.al (2005) [9] found that in private schools, 39% students scored A1, A and B grades whereas 32% students of the public schools scored these grades, indicating a better performance by private school students.

The Academy of Education Planning and Management conducted a series of studies on the quality aspect of primary education. The study focused on three subjects, mathematics, Urdu and science. The comparative performance of students in private and public schools in years 2003-04, 2004-05 and 2005-06 in mathematics is summarised in Table 2, which shows that students in private schools outperformed their counterparts in public schools in all three years.

Table 2: Comparing mathematics scores for public and private school students

	2003-04			2004-05			2005-06		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
Mean score in mathematics	46	51	48	45	51	47	44	49	46
Source: AEPAM Research Study No. 207									

AEPAM conducted another study to compare school performance to understand which schools are doing better by assessing and comparing quality. This study also looked at achievement of class V students in the country's government and private schools and a significant difference in performance was observed.

The U. S. Department of Education's National Centre for Education Statistics (NCES) (2006) [8] released a study that compared the performance in reading and math of fourth and eighth graders attending private and public schools. Using information from a national sample of public and private school students collected in 2003 as part of the National Assessment of Educational Progress (NAEP), ETS compared the test scores of public school students with those of students in all private schools, taken together. Separately, it compared student performance in public schools with that in Catholic, Lutheran, and Evangelical Protestant schools. The study reported that private public schools are doing better than their public counterparts both in mathematics and reading at grade 4 and 8.

The national survey conducted by the Multi-Donor Support Unit for the Social Action Program in 1995 aimed at determining the critical variables impacting academic achievement at the primary school level. Basic information was collected on 527 schools throughout the country. Academic achievement in mathematics, general knowledge and comprehension was tested for 914 teachers and 11,563 students in grade 5 (although data from the Sindh province was later discarded). The test instruments were based on textbook materials for grades 3 and 4. The survey found student performance to be satisfactory. Among other findings one was that private schools consistently scored better than government schools.

The NGO Action Aid Pakistan conducted an assessment of mathematics, Urdu and general knowledge on 965 students in 50 schools sampled from six districts in the four major provinces and AJK. In addition, the study included focal group sessions as well and interviews. Private schools performed significantly better than NGO and government schools in all categories. The difference between NGO and government schools was negligible. These results matched the opinions expressed in focal groups and interviews. The performance of students in private schools was better in all three subjects than the public and NGO Schools also Students enrolled in the NGO schools also performed better, though slightly, than their counterparts in the public schools. These differences were observed with respect to both the average marks and range of marks, . For example overall, on average private school students obtained 75 percent marks in all three tests. Average marks were 64 and 66 percent respectively for students enrolled in the public and NGO schools. The same pattern was observed in the subject wise assessment of students i.e. in mathematics, Urdu and general knowledge.

Two more dimensions of the assessment of class-4 students seem to be important. First, take the example of students who obtained more than 80 percent marks. In private schools, 46 percent of students obtained this percentage, while the corresponding figure for the students of NGO School was 31 percent. In the case of students in the public schools it declined to 25 percent. This pattern persisted for all three subjects, mathematics, Urdu and general knowledge. Second, take the example of students who obtained less than 40 percent marks. In this range of marks there was no major difference between the students of public and NGO schools. However, only a small proportion of private school students was found in this range. A mid-term survey was conducted by NCERT in India in state of Karnataka. A stratified random sampling technique was employed and the tools used were achievement test in mathematics for III and VI standard. It is found that private-aided students have scored significantly higher than students of private-unaided (totally private) schools in Kannada amd mathematics and also in their overall achievement. It was also found that the students of private-unaided have significantly high achievement in mathematics when compared to student of government schools. But it is found that there is no significant difference in the achievement of private-unaided and government students with regards to Kannada and their overall achievement. It is found that VI standard students of private-aided schools have scored significantly higher than private-unaided and govern ment school students with regards to Kannada and mathematics.

It was also found that VI standard students of private-unaided schools have scored significantly better than public school students with regards to Kannada, English, mathematics and their overall achievement. But VI standard students of private-unaided schools have scored better in English when compared to private aided which is better than government school student's achievement in English than Mandya, Chitradurga and Gulbarga students.

All of the above studies compare both sector in terms of achievement and all have concluded that private sector is doing well. This study adds to this comparative literature in terms of cost and benefit and investigates which sector is doing better at a relatively low cost per student.

The advantages of studying education from an economics perspective include:

a. The synchronising of the education system with social system.

b. Finding out priorities in the national policy on education and their implementation,
c. Helping the redistribution of resource and rearranging priorities
d. Promoting needed changes in education and making it socially relevant and economically productive and
e. Improving the techniques of educational planning and management.

Cost benefit analysis. The inputs of education can be measured in terms of money or of the real resources that are used in the educational process namely the time of teacher, students and other staff and books, materials, equipment and buildings. All these resources have their alternative uses. If they were not used for educational purposes they could be devoted to some other activity and since resources are limited this means that alternative opportunity for using these resources must be sacrificed or forgone. In economic analysis the value of resources is measured in terms of the alternative opportunity that is sacrificed when resources are allocated in a particular way.

What about the cost of room and board while attending school? This is not a true cost of attending school at all, because whether or not the student attends school, someone must pay room and board.

Money cost and opportunity cost. The inputs of education can be measured in terms of money or of the real resources that are used in the educational process namely the time of teachers, students, and other staff and books, materials, equipment, and buildings. All these resources have alternative uses, if they were not used for educational purposes they could be devoted to some other activity, and since resources are limited this means that alternative opportunities for using these resources must be sacrificed, or forgone. In economic analysis the value or resources is measured in terms of the alternative opportunities that are sacrificed when resources are allocated in a particular way, and in order to underline the fact that resources are limited, so that choices necessarily involve giving up alternative opportunities, the economist uses the term "opportunity cost". For example, the resources devoted to education might have been used to provide health care or agricultural development. The opportunity cost of building a new university is the alternative projects that are forgone, a new technical school, perhaps, or some new primary or secondary schools.

It is immediately obvious that the concept of opportunity cost is much wider than the concept of money cost or expenditure. In everyday language the term cost is usually used to refer to money, but the term opportunity cost refers to the real resources which are represented by the expenditure of money. These real resources include not only resources that are purchased, and can therefore be measured in money terms, but resources which are not bought or sold. For example, the value of teachers' time can be measured in financial terms, since teachers normally are paid wages or salaries, but the time of students or of unpaid volunteers must also be included when resources are valued and measured, although they are not paid, their time does have alternative uses, and therefore it does have an economic value and an opportunity cost, even though this is not reflected in expenditure, similarly, the opportunity cost of a new school building includes the value of the land on which the school is built, even if this land is given by the local community, however, the land will be included in the figure for capital expenditure only if it was actually purchased.

The opportunity costs of education include all the real resources that are devoted to the educational process, and where these cannot be measured directly in money terms, and estimate of their value in alternative uses must be included. The most obvious example is the time of students, which is measured in terms of the earnings forgone by students when they choose to enrol in education rather than seek paid employment. Some writer uses the term "opportunity cost" simply to refer to the value of resources that are not bought or sold, as measured by earnings forgone or some other measure. However, strictly speaking opportunity cost includes all resources, whether or not they are bought and sold.

The opportunity cost of education can be measured in terms of the cost to the individual or to society as a whole. The cost of education to individual students or their families includes expenditure on fees, books, and equipment, and also earnings forgone. The cost to society, however, is much wider and includes not only the wages and salaries of teachers and other staff, expenditure on books, equipment, raw materials, and buildings, but the forgone earnings of students, which represent output forgone by society as a whole. The costs to the individual are called private costs, and the total costs to society are called social costs.

As a result the difficulty of measuring opportunity costs, particularly the difficulty of measuring earnings forgone, or the value of land or materials that are given rather than purchased, educational cost analysis frequently concentrates on money expenditure rather than opportunity cost. Nevertheless, the distinction between the money that is actually spent on education and the opportunity cost of the resources devoted to

education is important, and some types of cost analysis, for example cost-benefit analysis, do use opportunity costs rather than money expenditures.

Economists are concerned with allocating resources in the optimal (best) way because there are insufficient resources to satisfy everybody's or every government's wants. If resources are scarce and we desire to allocate them optimally, we need to be able to say that the costs and benefits of alternative projects are before we can choose the optimal allocation of resources. When we measure costs we usually do so in money terms, but the true cost is what these money costs represent in terms of real resources, such as land, machinery and raw materials. When, for example, the government decides to spend its money, use resources, to support the building of a new technical college, it automatically forgoes the opportunity to invest resources in an alternative projects, such as a new rural hospital. What society forgoes by investing in a technical college is a rural hospital; and this alternative forgone is called the opportunity cost.

3. Objectives of the study

1. To compare the achievement of students in private and public schools in Malakand district of Pakistan.
2. To compare the cost per student in private and public schools in Malakand district of Pakistan.

Population
There are 49 public and 27 private secondary schools in Malakand district. These comprised population of the study.

Sample
11 private and 11 public schools were selected randomly for this study. Out of public schools 4 schools were female and 7 male while in private sector most of the schools were coeducational, but they had separate sections for girls and boys.

Data collection
Financial data was taken from District account office for 11 public schools. This included only the monthly salary of the teachers. Financial data from private schools was taken from respective schools. Secondary data for the students in the form of student's results were taken from gazette of BISE Malakand. Also a test of mathematical reasoning was administered to measured high order learning in the sampled schools.

Analysis

Table 3: Students' results from the sampled schools

	Private schools (n=11)	Public schools (n=11)
Pass percentage	76	63
Passed with A1 grade	37 (10%)	8 (4%)
Passed with A grade	101 (27%)	42 (19%)
Passed with B grade	142 (38%)	89 (40%)

Table 3 shows that private schools are leading considerably over public schools in pass percentage and grade wise performance. The students of private schools have taken more superior grades, A1 and A, than the students of public schools. Similarly 76% students are in passed categories as compared to 63% from public schools. The comparative performance was analysed using a Chi square test. A1 and A grade students were combined in higher grades categories and grade B was assigned middle grade and below B grades were considered as lower grades. The results are displayed in Tables 4 and 5.

Table 4: Grade wise comparison of private and public schools

	Higher grades	Middle grades	Lower grades	Total
Public	50	89	270	409
Private	138	142	145	425
Total	188	231	415	834

Table 5: Chi-square tests

	Value	df	Asymp. sig. (2-sided)
Pearson Chi-square	90.729 a	2	.000
Likelihood ratio	93.049	2	.000
Linear-by-linear association	87.218	1	.000
N of valid cases	834		
a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 92.20.			

The Chi square analysis in Table 5 shows that the comparative grade wise performance by the private school students is significantly better than public school students.

The performance in high order learning in the form of reasoning test score was analysed using a t-test. Table 6 shows that the mean score of private school students (80.91) is better than mean score of public school students (62.40) in the test of mathematical reasoning, which was aimed to measure high order learning. The t-test analysis in Table 7 shows that the difference between their means is significant, favouring private schools.

Table 6: Paired samples statistics

		Mean	N	Std dev	Std error mean
Pair 1	Thinking	80.91	228	24.394	1.616
	Thinking	62.40	228	18.592	1.231

Table 7: Paired samples test

		Paired differences					t	df	Sig. (2-tailed)
		Mean	Std dev	Std error mean	95% confidence interval of the difference				
					Lower	Upper			
Pair 1	Thinking-thinking	18.509	31.093	2.059	14.451	22.566	8.988	227	.000

Per student cost analysis. Cost per student in both types of schools was higher in public schools than private schools. Cost wise comparison is summarised in the table below.

Table 8: Per student cost per month

School type	Per student cost per month		Difference
	In Pakistan rupees	In Aust. dollars	

Public	914	14	474 Pak rupees or Aus $7
Private	440	6.7	

It is clear from Table 8 that, in contrast to some misconceptions, private schools are giving better results for less than half of the cost that is incurred by public schools.

Discussion

The results of this study reject the misconception of the masses that private school are expensive for the society. It is clear from analysis that in public schools per student cost is more than double than monthly cost per student. This is a significant finding for a country with low GDP like Pakistan. The achievement of the students is significantly different, which is a serious concern for public authorities and society. The students of private schools were found to perform well in both schools examinations and reasoning test.

The findings of this study highlight the need for improving the quality of education in public schools by recruiting more qualified teachers and improving overall supervision.

The type of authority that the principals or owners of private schools enjoy is likely to play a significant role. Teachers in private schools keep in mind that if they do not perform well their job is not secure. By contrast, the headmasters in public schools can neither terminate teachers nor transfer them. So it is recommended to make the heads of the public schools more authorised so that they can manage their human resources well.

Limitations and further research

The study was limited to recurrent budgets in terms of teacher's salary only. Detailed inclusion of public expenditures such as capital cost, utilities, medical and pension/ gratuity for teachers could bring out the picture more clearly. Students' achievement was limited to cognitive aspect only. Further studies could include the affective and psychomotor domain as well, along with personality development of the students.

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